

- Application No. 10/815,850
Reply to Office Action of November 7, 2005

IN THE SPECIFICATION

Please replace the paragraph at page 22, lines 5-11 with the following rewritten paragraph:

(2) The dustpan portion 23 at the rear portion of the scraping up body 16 [[21]] can scrape up both dust which the scraping up body 16 scrapes up from the deep portion of the fibers in the carpet, and the dust which is scraped up from the hard flat surface of the flooring at the rear side, and the dust is securely guided in the direction of the adhesive roll 21, whereby it is possible to improve dust collecting performance.

Please replace the paragraph at page 32, lines 13-17 with the following rewritten paragraph:

In the cleaning device 10, as shown in FIGS. 8 and 9, the scooping surface portion 23B of the dustpan scraping up portion 23 is provided with a plurality of convex portions 101 extending along a scraping up direction of the scraping up body 16, and a plurality of grooves 102 formed between the adjacent convex portions 101.

Please replace the paragraph at page 32, line 18 to page 33, line 5 with the following rewritten paragraph:

Further, the scooping surface portion 23B of the dustpan scraping up portion 23 is structured such that the leading ends of a plurality of convex portions 101 [[61]] are extended to the bottom surface portion 23A, so that an edge 103 on the floor surface side of the scooping surface portion 23B of the dustpan scraping up portion 23 is provided with a concavo-convex tooth surface 104 extending along a width direction of the edge 103. Further, an R surface (a curved surface), for example, having a radius of about 0.3 mm is applied to both side corner portions 105 in the leading end of the convex portion 101 forming the

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concavo-convex tooth surface 104, in the plan view (FIG. 8(C)) of the scooping surface portion 23B of the dustpan scraping up portion 23, and an R surface, for example, having a radius of about 0.3 mm is applied to both side corner portions 107 of a recess portion 106, thereby preventing the concavo-convex tooth surface 104 from being caught on the carpet on the floor surface by both side corner portions 105.

Please replace the paragraph at page 33, lines 6-9 with the following rewritten paragraph:

In this case, aspects in FIGS. 10(A) to 10(C) can be employed for the leading end shape of the scooping surface portion 23B of the dustpan scraping up portion 23, in view of the design of a metal mold for forming the dustpan scraping up portion 23.

Please replace the paragraph at page 36, lines 7-12 with the following rewritten paragraph:

Further, in the scraping up portion body 16A constituting the scraping up body 16, the fiber members 111 having different bending elastic properties are mixed. Specifically, the thick fiber members 111 and the thin fiber members 111 made of the same raw material are mixed, and more specifically, pig bristles are employed as the fiber members 111.

Please replace the paragraph at page 39, lines 15-24 with the following rewritten paragraph:

Further, the cleaning device 10 according to the seventh embodiment is structured such that the scraping up body 16 is constituted by a supporting shaft 121, the scraping up portion body 16A comprising a brush implanted along an entire length of the supporting shaft 121 in an axial direction, and both side tire portions 16B connected to both end portions of

the supporting shaft 121, and the rotational shaft 17 mentioned above is provided in the tire portions 16B. The scraping up portion 16A may be either in contact with the adhesive roll 21 or in non-contact with the adhesive roll 21. Both side tire portions 16B are arranged in both outer sides of the frame 15.

Please replace the paragraph at page 40, line 22 to page 41, line 1 with the following rewritten paragraph:

(b) The supporting shaft 131 of the rotating body 18 is separated from the dustpan portion 23 (the bottom surface 23A [[23D]] of the dust receiving portion 23C) via a large gap, at the portion to which the rotating element 18A is not fixed (FIG. 15). In this case, at the bottom surface 23A [[23D]] of the dust receiving portion 23C, the portion corresponding to the rotating element 18A is formed as the circular arc recess portion 23F [[23E]].

Please replace the paragraph at page 45, lines 4-10 with the following rewritten paragraph:

A sun shaft 163 inserted and engaged with both end portions of the supporting shaft 121 [[161]] in the scraping up body 16 integrally in the rotational direction is rotatably arranged so as to be inserted to a hollow portion of the hollow shaft portion 162A from an outer side of the base 162, and a sun gear 164 is provided in an outer end portion of the sun shaft 163. The sun gear 164 is provided at the center of rotation of the scraping up body 16.

Please replace the paragraph at page 53, line 24 to page 54, line 16 with the following rewritten paragraph:

(1) The adhesive roll driving means 180 speeds up the rotating element 18A of the rotating body 18 faster than the rotation of the tire tier portion 18B, thereby increasing the

circumferential speed of the adhesive roll 21 which the rotating element 18A rotates in a contact state. In other words, the rotating element 18 constituting the adhesive roll driving means 180 rotates the adhesive roll 21 at a faster circumferential speed in an opposite direction to the rotational direction of the scraping up member 16A of the scraping up body 16. Accordingly, the scraping up member 16A of the scraping up body 16 and the adhesive roll 21 are opposed to each other, the moving direction of the surface of the adhesive roll 21 is made in conformity with the moving direction of the scraping up member 16A, in the dust transfer area in which the dust scraped up by the scraping up member 16A are transferred to the adhesive roll 21, and the moving speed of the adhesive roll 21 becomes high.

Accordingly, after the leading end of the dust such as the hair or the like entwined with the brush implanted fibers of the scraping up member 16A is attached to the adhesive roll 21, the adhesive roll 21 winds up the dust such as the hair or the like so as to remove the dust from the scraping up member 16A, and the winding and picking up property can be improved.

Please replace the paragraph at page 57, lines 4-22 with the following rewritten paragraph:

It is preferable that the friction coefficient of the surface material of the tire portion 18B in the rotating body 18 is high. Since the rotating body 18 is in contact with the carpet only by the tire portion 18B, and the rotating element 18A is separated from the carpet, the tire portion 18B is not prevented from rotating. Accordingly, the rotating element 18A does not slow the rotation of the tire portion 18B even in carpet having thick-piled fibers as mentioned above. Further, in carpet having thick-piled fibers, since the tire portion 18B is mounted on the carpet in a floaty manner, the contact pressure of the tire portion 18B is low, however, in the case that the material of the surface material of the tire portion 18B has a large friction coefficient, it is possible to securely rotate the adhesive roll 21 by the rotating

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body 18 [[18B]]. If the adhesive roll 21 smoothly rotates, it is intended to rotate the scraping up member 16A in the direction of scraping up and rotating the scraping up member 16A of the scraping up body 16 which is in contact with the adhesive roll 21. Therefore, the scraping up member 16A is smoothly rotated, and the dust collecting performance is improved. For example, silicone rubber is excellent and soft polyethylene is good.

Please replace the paragraph at page 57, line 23 to page 58, line 9 with the following rewritten paragraph:

In this case, the speed increasing means 160 for the scraping up member 16A of the scraping up body 16, and the speed increasing means 180A of the rotating element 18A for the adhesive roll 21 may be constituted by a speed increasing means 200, as shown in FIGS. 29 and 30. The speed increasing means 200 can be structured by a gear train formed by an engagement between a large-diameter internal gear 201 (a large gear) provided around the rotational center of the tire portion 16B (or 18B [[18C]]), and a small-diameter external gear 202 provided around the supporting shaft 121 (or 131 [[18A]]) (the rotational center) of the scraping up member 16A. The speed increasing means 200 is structured such that on the assumption that a pitch circle diameter of the large-diameter internal gear 201 is set to da, and a pitch circle diameter of the small-diameter external gear 202 [[102]] is set to db, a speed increase magnification a_1 (or a_2)= da/db is established.

Please replace the paragraph at page 58, lines 10-14 with the following rewritten paragraph:

In the speed increasing means 200, the connection portion between the small-diameter external gear 202 and the scraping up member 16A (or the rotating element 18A) is provided

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within the projection surface of the tire portion 16B (or 18B [[18C]]) in the axial view of the tire portion 16B (or 18B [[18C]]).

Please replace the paragraph at page 58, lines 15-18 with the following rewritten paragraph:

In the speed increasing means 200, the rotational direction of the scraping up member 16A (or the rotating element 18A) becomes the same direction as the rotational direction of the tire portion 16B (or 18B [[18C]]).